

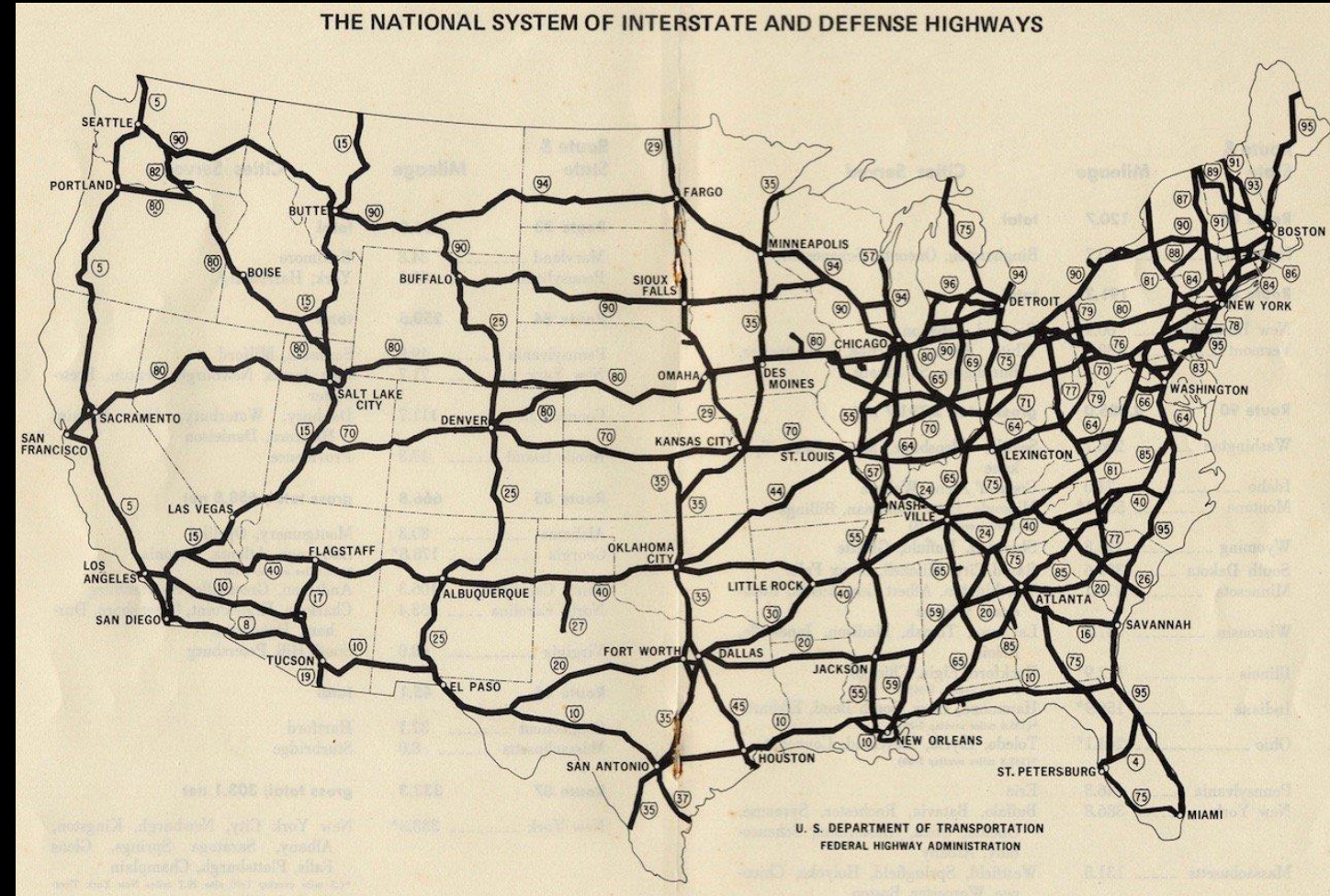
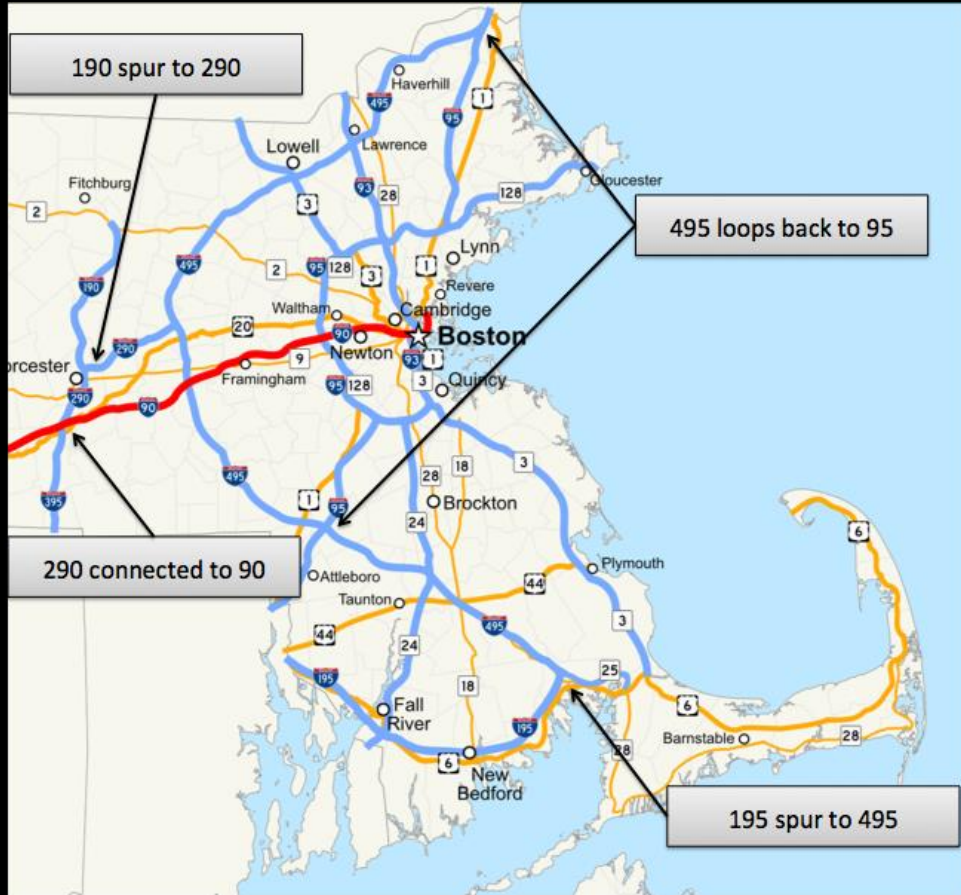
OVERVIEW - Water Quality



New York – New Jersey Harbor & Estuary Program

2019-Nov

FEDERAL HIGHWAY FUNDS



Do you believe in:

Societal Investments based on Cost / Benefit?

Concept of Assimilative Capacity ?

If so you must recognize importance of both:

Magnitude of Load &
Location of Load

ENGINEERING PROJECT CONSIDERATIONS

Design

Objectives

Life

Conditions

PROJECT OBJECTIVE

NY/NJ HEP Thoughts:

Stormwater & Combined Sewer Overflow Control

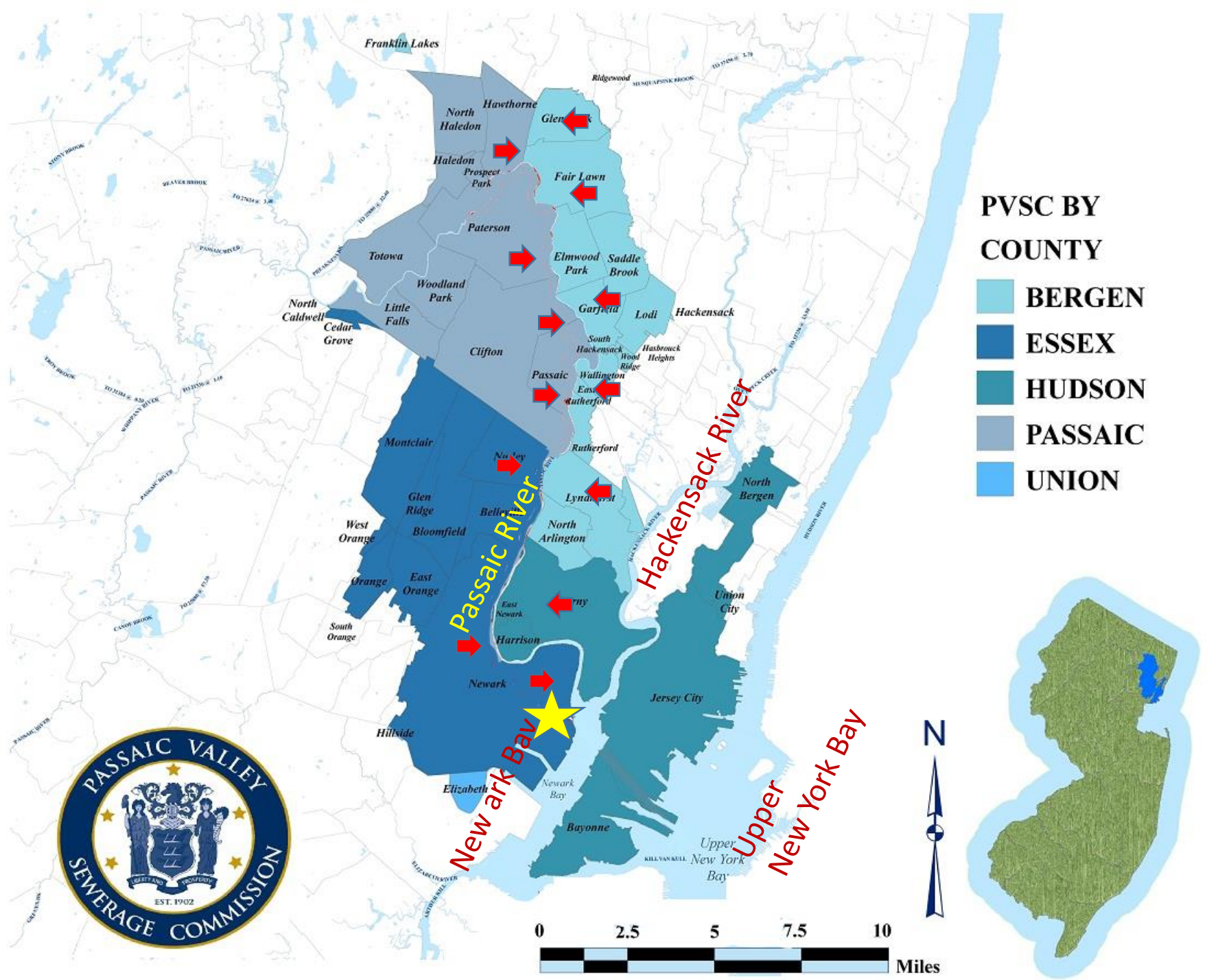
Possible Project Objectives

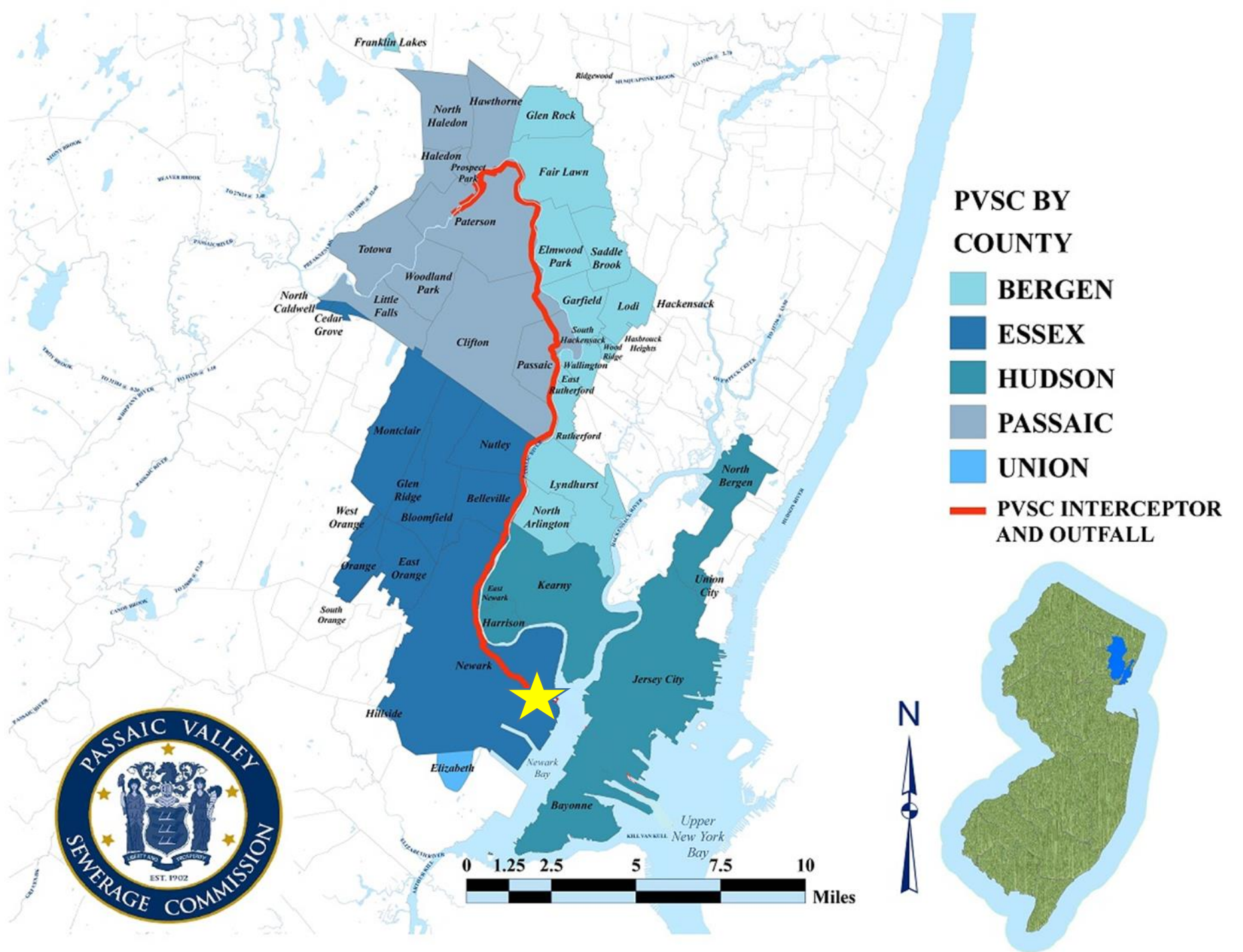
- Reduce Quantity of CSO Overflows
- Reduce Number of CSO Overflows
- Reduce Spatial Impact of CSO Overflows
- Maximize Canoe / Kayak-able Miles (2°)
- Maximize Swimmable Shoreline Miles (1°)
- Minimize # Days 'Lifeguarded Beach' Closed (1°)

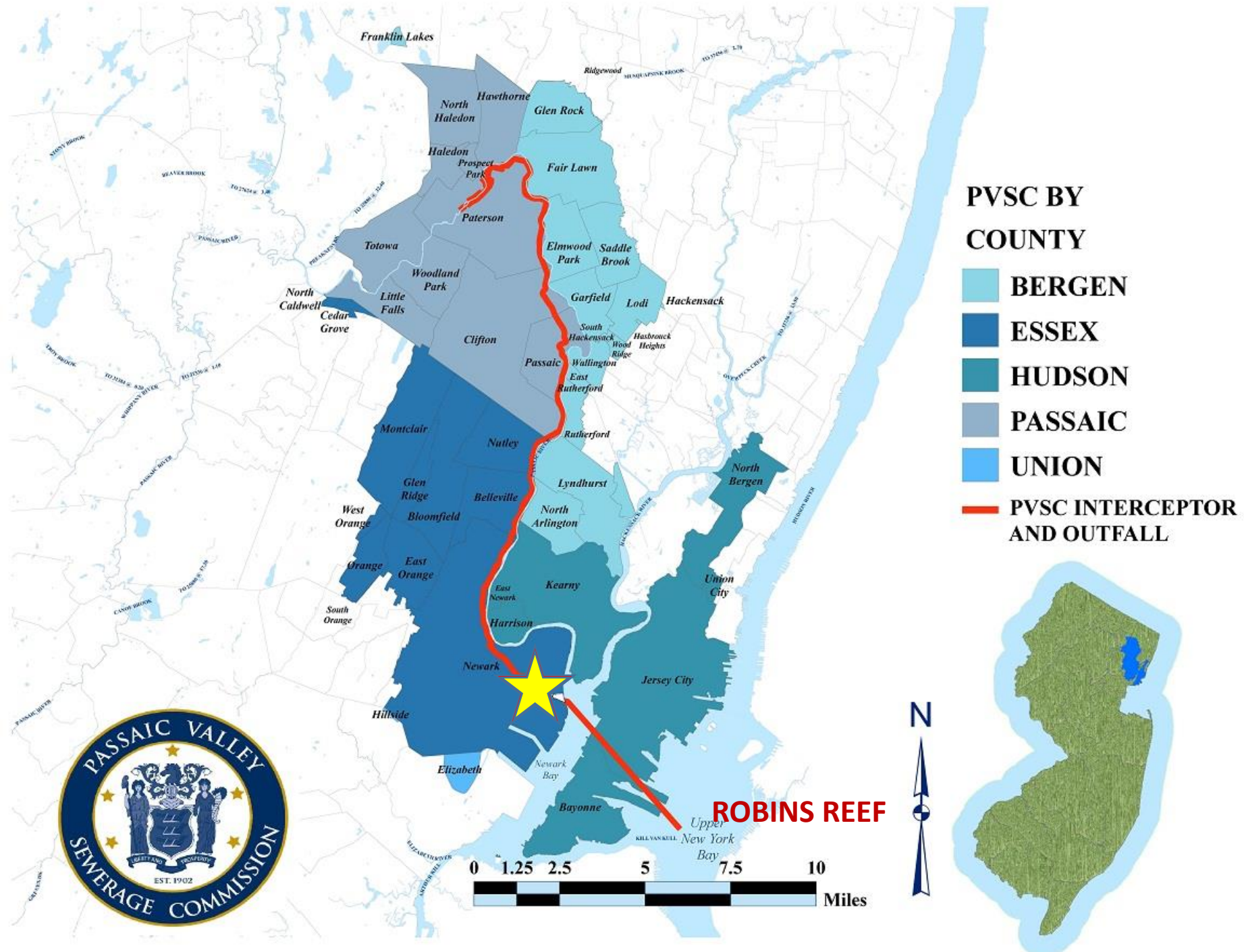
Possible Project Design Objectives

Example

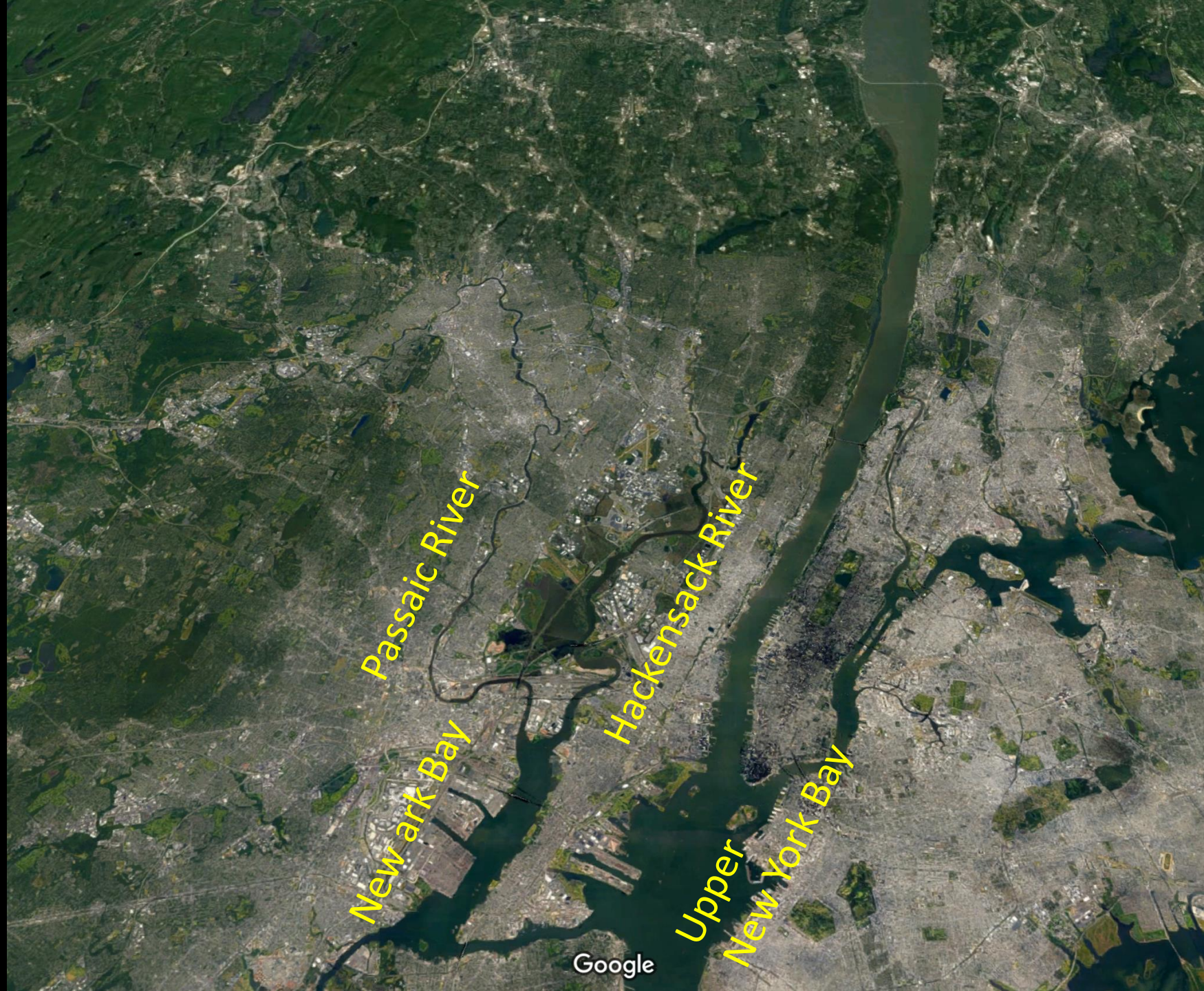
- | | |
|---|---------------------------|
| 1. Bathing Beaches – minimize closures | • Orchard Beach |
| 2. Main Stem Rivers – restore water quality | • Hudson River |
| 3. Tributaries – restore water quality | • Gowanus Canal |
| 4. CSO Overflow – minimize annual volume | • <i>billion gal/year</i> |



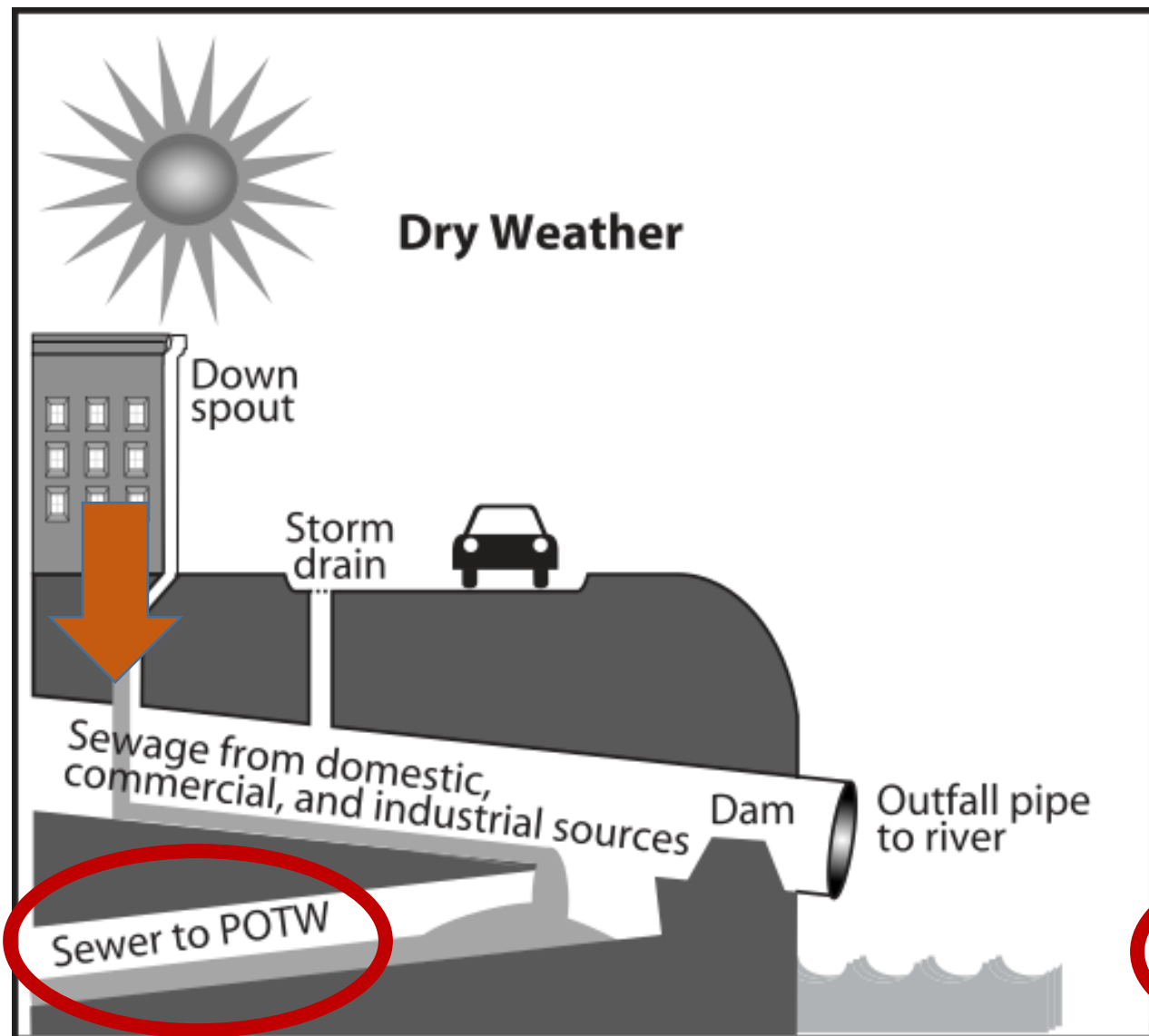




1921 U.S. Supreme Court Lawsuit



We cannot withhold the suggestion, inspired by the consideration of this case, that the grave problem of sewage disposal presented by the large and growing populations living on the shores of New York Bay is one more likely to be wisely solved by co-operative study and by conference and mutual concession on the part of representatives of the states so vitally interested in it than by proceedings in any court however constituted.



ENGINEERING PROJECT CONSIDERATIONS

Design

Objectives - Swimmable Hudson

Life - CSO Life ~ 100 years

Conditions - Design Storm at END of Design Life



Tenement Museum

er 45 at Hudson
River Park

Canal Park

New York Law School

Pier 26 at Hudson
River Park

Pier 25 at
Hudson
River Park

Washington
Market

Google

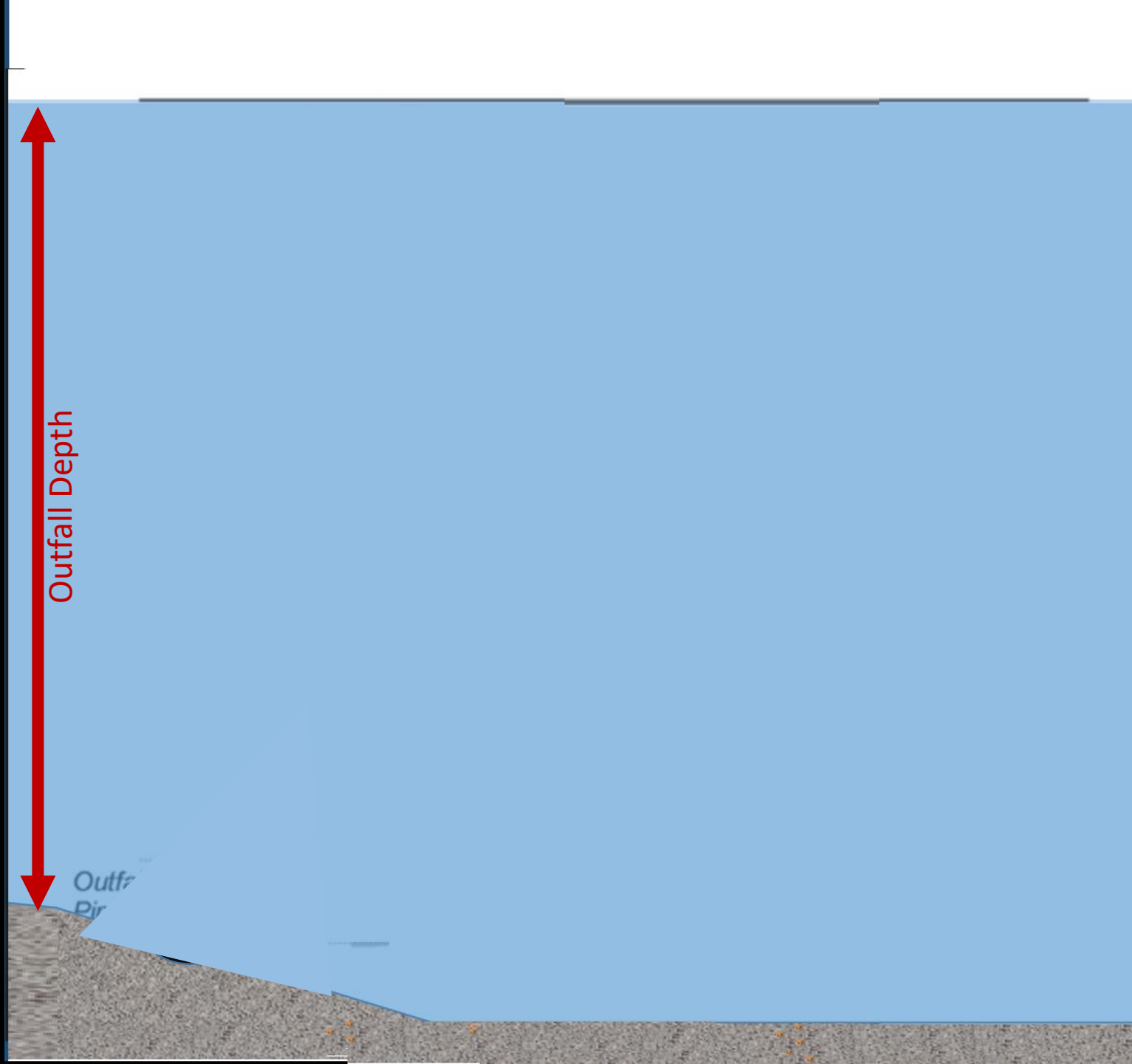
Google Camera : 726 m 40°43'16"N 74°00'00"W 42 m 100'

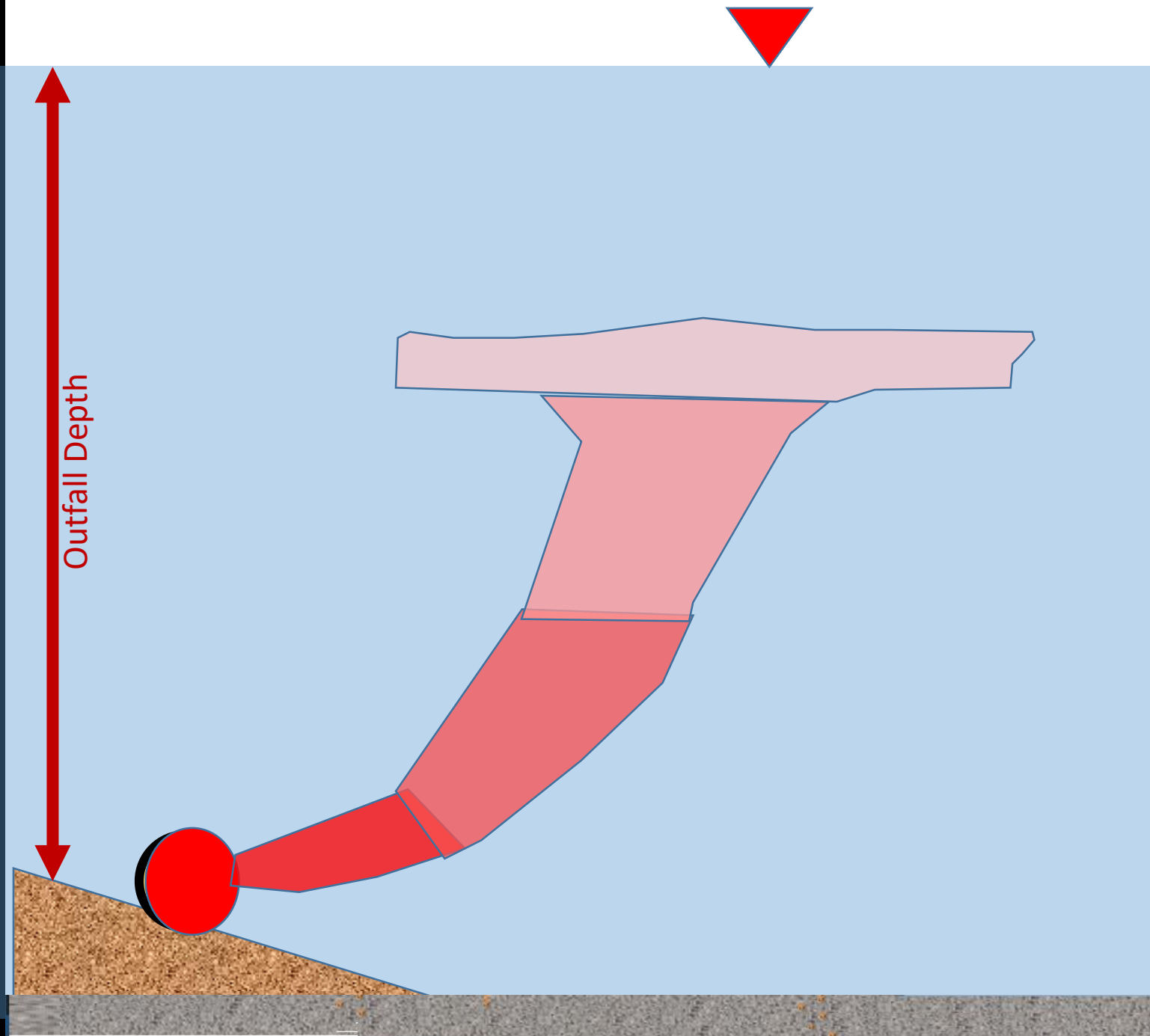


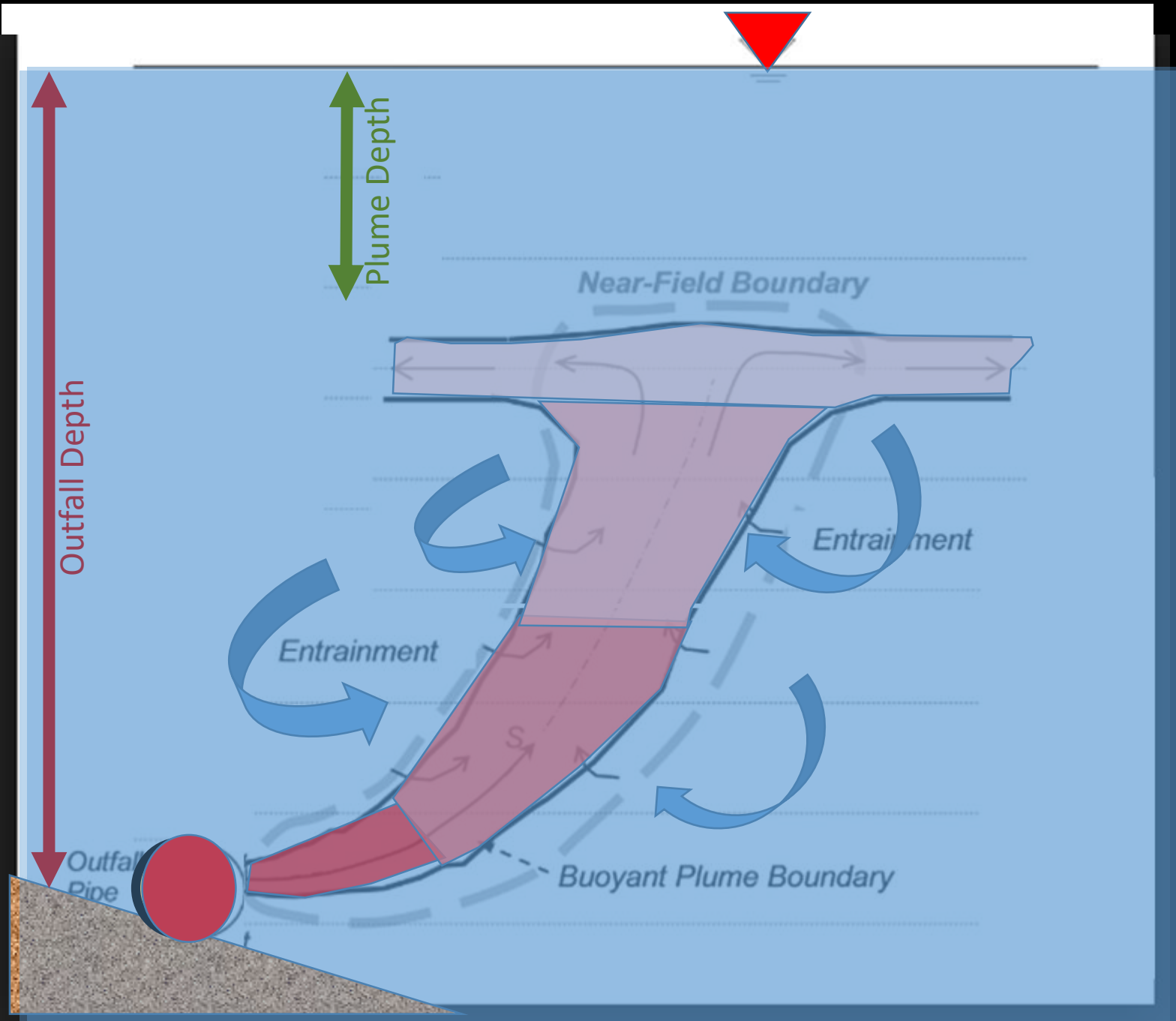


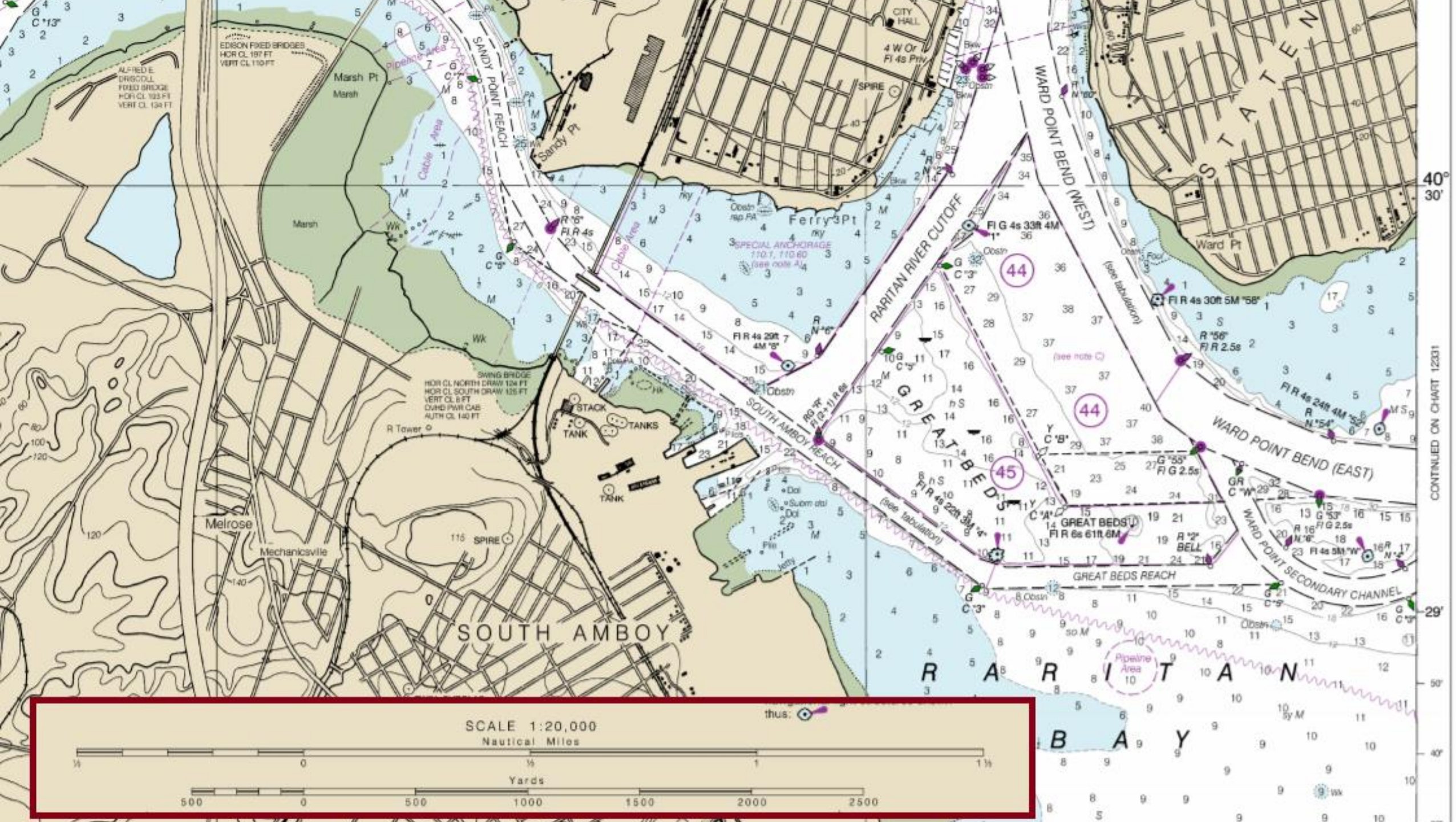


A **BUOYANT JET** is trapped by a **STRATIFIED AMBIENT** without crossflow (Source: Fan, CIT).

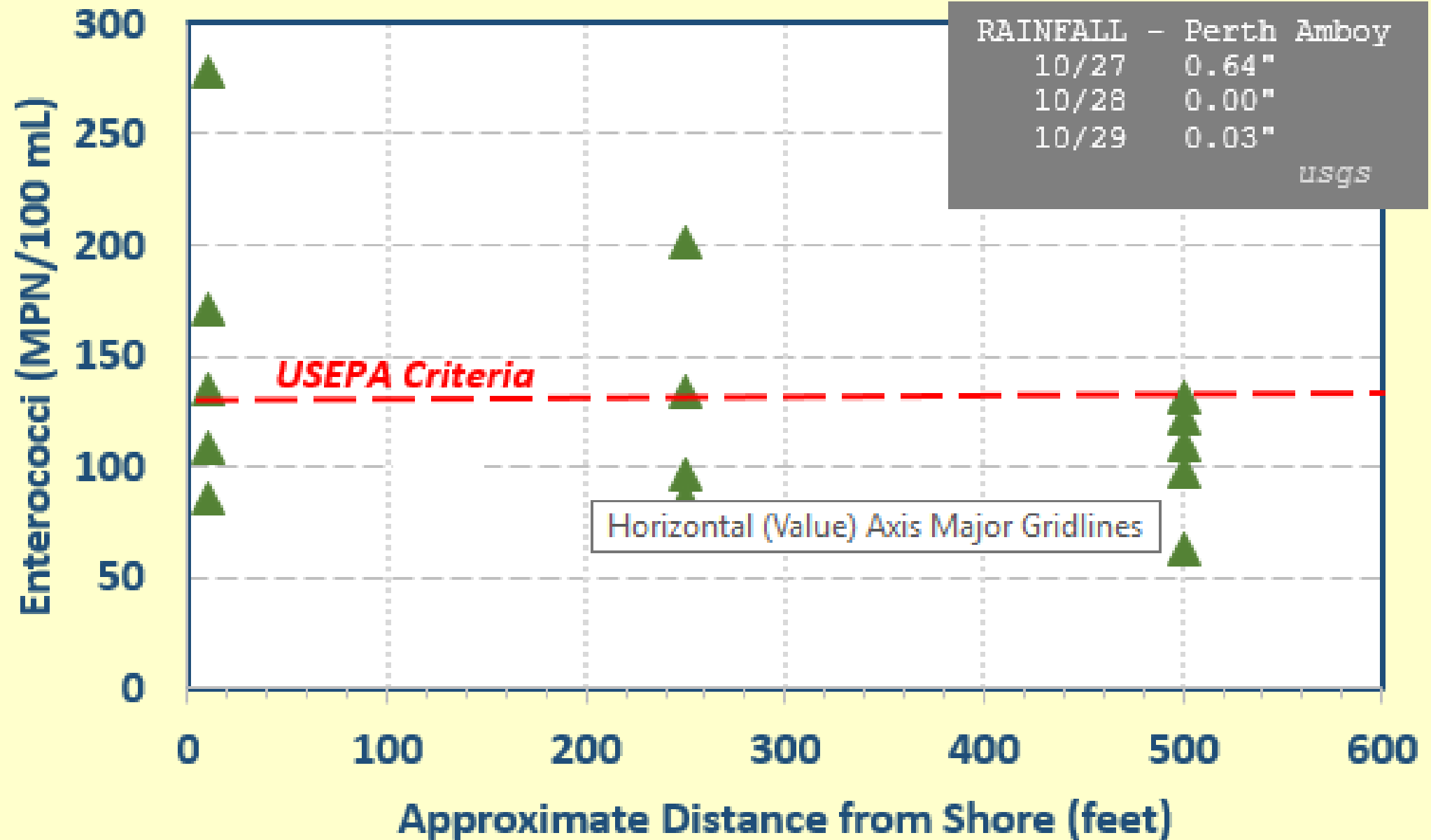




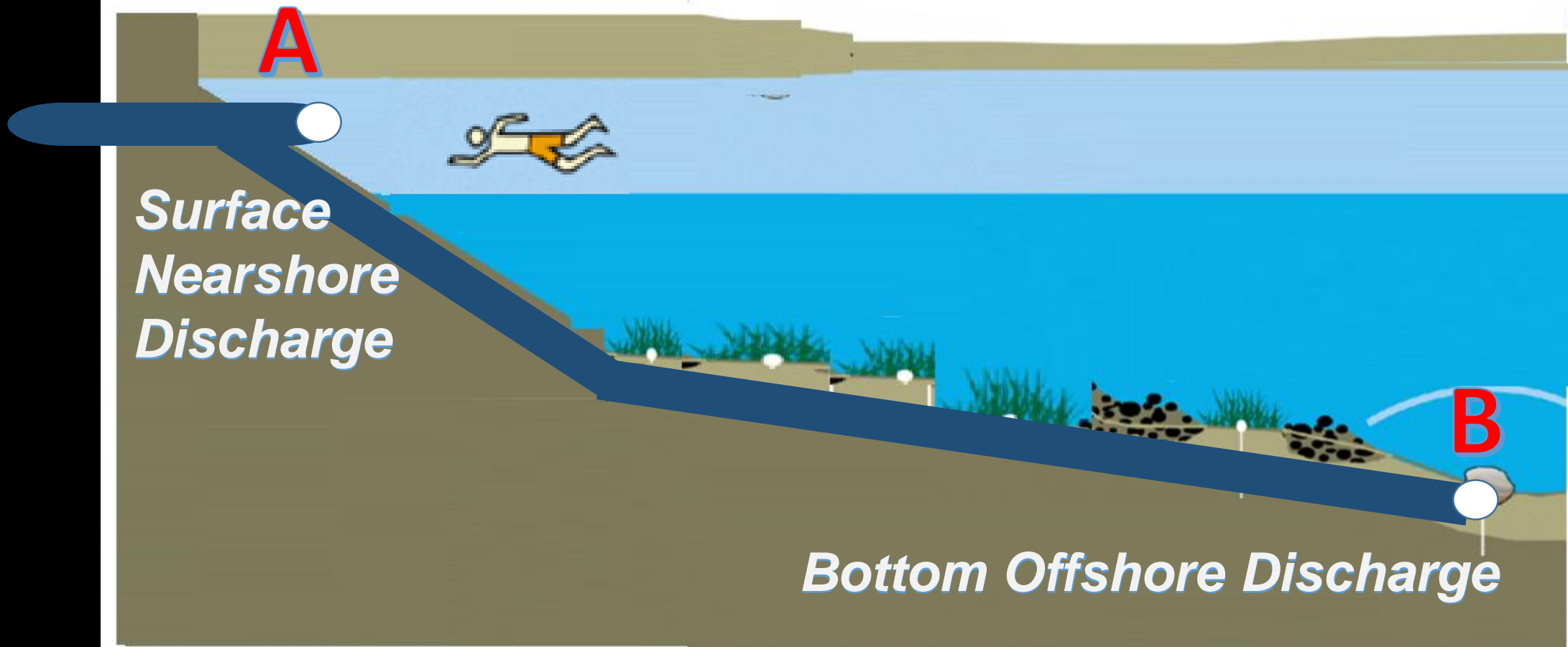


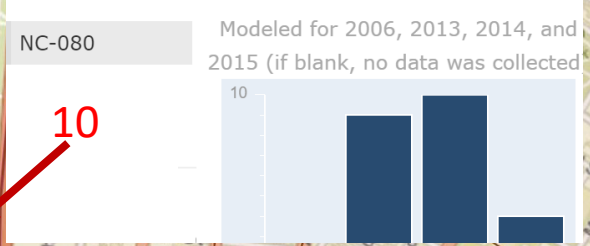


Perth Amboy: 10/29/2019 WQ Survey - Pathogens

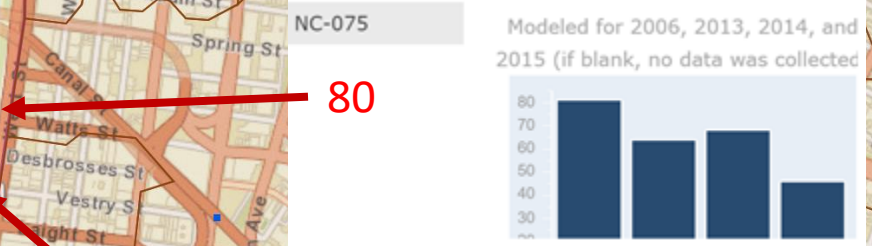


NEAR SHORE: Primary Contact Recreation

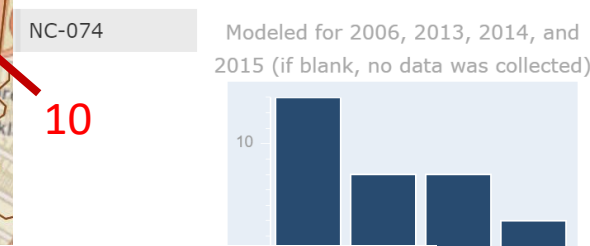




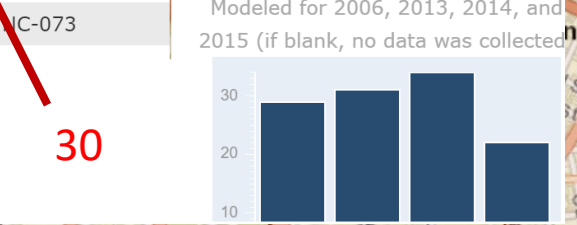
10



80



10



30

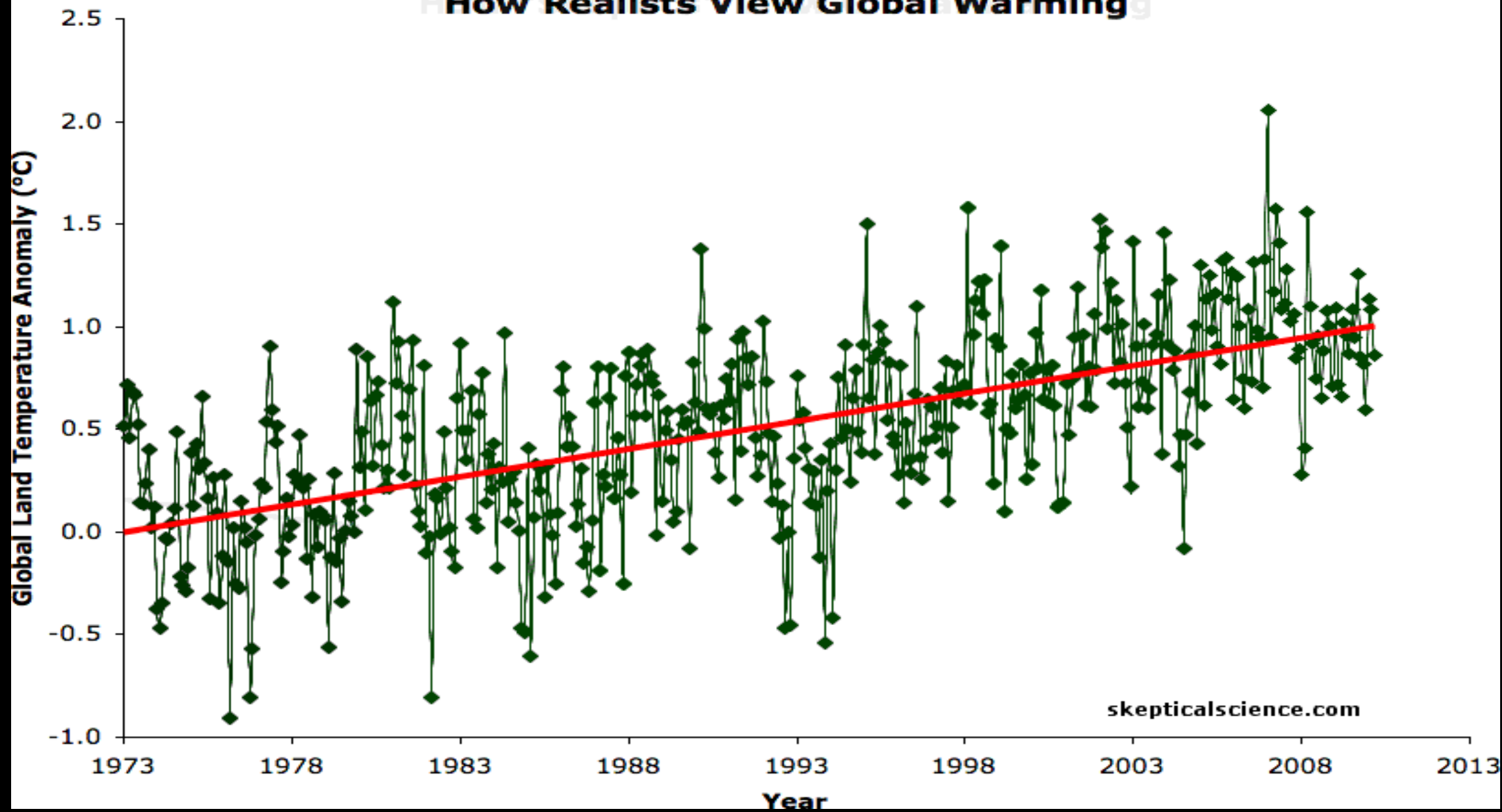




The Downtown Boathouse



How Realists View Global Warming



ASSIMILATIVE CAPACITY: Magnitude of Load & Location of Load

PVSC History

Governor of New Jersey: “. . . devising some system of sewage disposal”

Commission 1: 1896

Commission 2: 1897

Commission 2: 1898

Act of Legislature: 1902

Conceptual Plan: 1908

NYS Files Suit: 1908

U.S. Supreme Court 1921 [PEOPLE OF STATE OF NEW YORK v. NEW JERSEY, (1921)]

Argued: January 25, 1921

Decided: May 2, 1921

Construction Complete: 1924

CWD-CWRB - CWD-WMB Management Meeting: 2019-03-20

1. Hackensack River TMDL

2. PANYNJ – NYHOPS Model

- i. 'Storm Surge,*
- ii. NYC-CSO - NJHDG-CSO*
- iii. LISS Hypoxia,*
- iv. LI Nitrogen Action Plan,*
- v. Hackensack River DO,*

~~3. Harbor Action Plan: debriefing~~

4. Technical Points & Outstanding issues

a) FORGE RIVER TMDL - July **2016**

b) NY/NJ CSO LTCPs - Nov **2016**

Lower Hackensack River Dissolved Oxygen Impairment: **TIMELINE**

Date	Title	Years Delayed
1976	Basin Plan -	na
1984	Facilities Plan	na
1985	NJDEP Permit: Upgrade or Relocate	na
1988	NJDEP set 1988 Completion Date	0
	...	
2008	Hackensack Nutrient TMDL Meeting	20
2011	Hackensack River Model Study Evaluation Group (MEG) Report	23
2013	TMDL Study Sampling Report (2010 Data)	25
2017	USEPA Comments to NJDEP regarding wq modeling study	29
2017	NJDEP Agrees to a Model Evaluation Group process (MEG)	29
2019	NJDEP notifies USEPA that have been working unilaterally with BCUA and have abandoned agreement to form a MEG. USEPA has still not received information requested in 2017	31

DESIGN LIFE

PRELIMINARY
CLIMATE RESILIENCY
DESIGN GUIDELINES

DESIGN LIFE: The life expectancy of an asset or product as determined during design.
USEFUL LIFE: The period over which an asset or component is expected to be available for use by an entity. This period of time typically exceeds the *design life*

Table 2 – Baseline and projected design storm events for the 1-hour and 24-hour duration

<u>1-hour duration rainfall depths</u>			
End of useful life	5-year design storm (inches)	50-year design storm (inches)	100-year design storm (inches)
Baseline ^{55,56}	1.61	2.57	2.87
Through to 2039 ⁵⁷	1.83	3.02	3.41
2040-2069	1.97	3.33	3.93
2070-2099	2.12	3.74	4.34
<u>24-hour duration rainfall depths</u>			
End of useful life	5-year design storm (inches)	50-year design storm (inches)	100-year design storm (inches)
Baseline ^{58,59}	4.70	7.83	8.79
Through to 2039 ⁶⁰	5.41	9.21	10.55
2040-2069	5.88	10.13	12.31
2070-2099	6.35	11.28	13.40

+32%

+51%

+35%

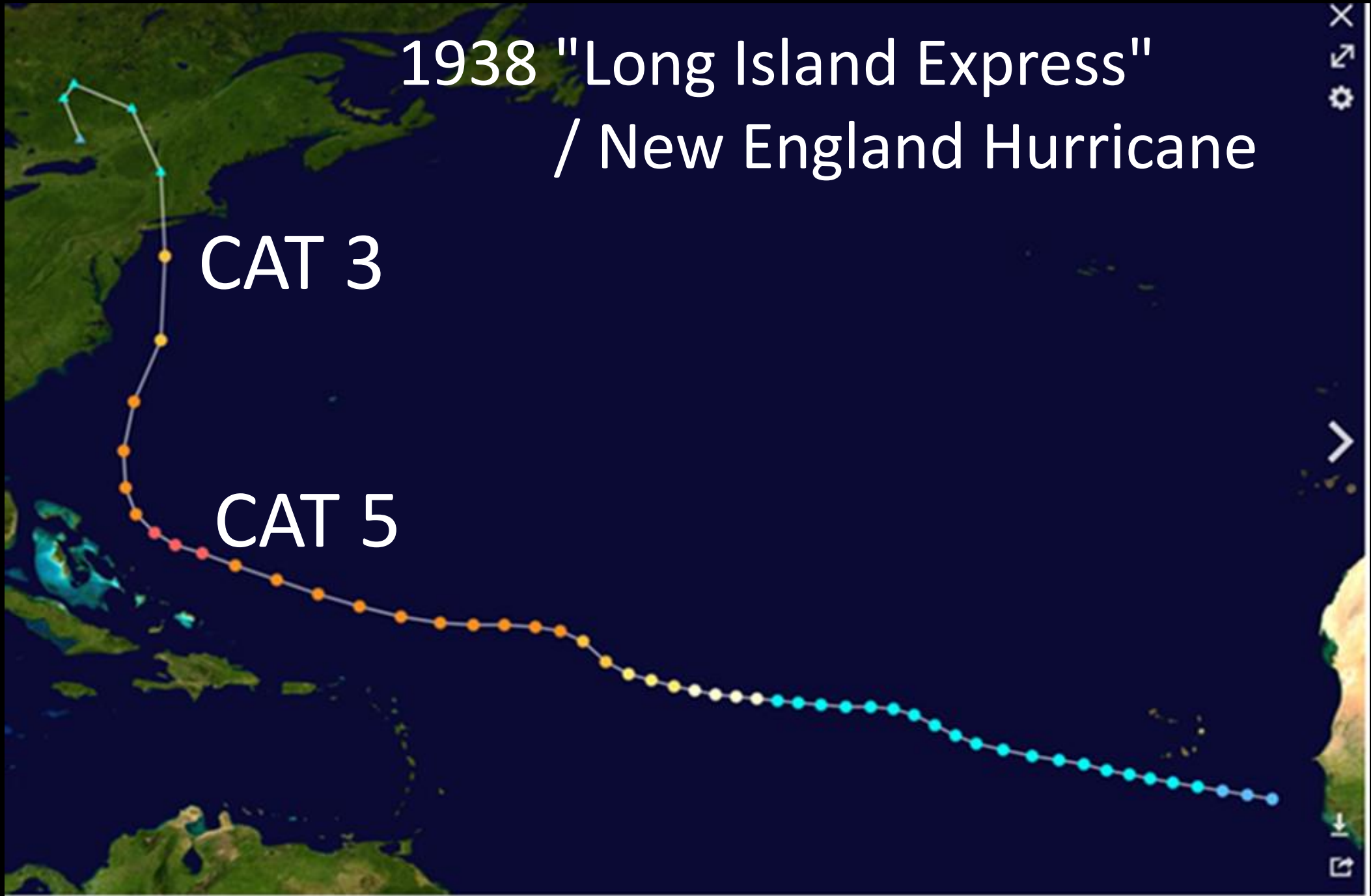
+52%

DESIGN CONDITIONS

1938 "Long Island Express" / New England Hurricane

CAT 3

CAT 5



Superstorm Sandy





Delta Works:

North and South Holland:	1 per 10,000 years
Areas at risk from sea flooding:	1 per 4,000 years
Transition areas:	1 per 2,000 years

NY/NJ HATS:

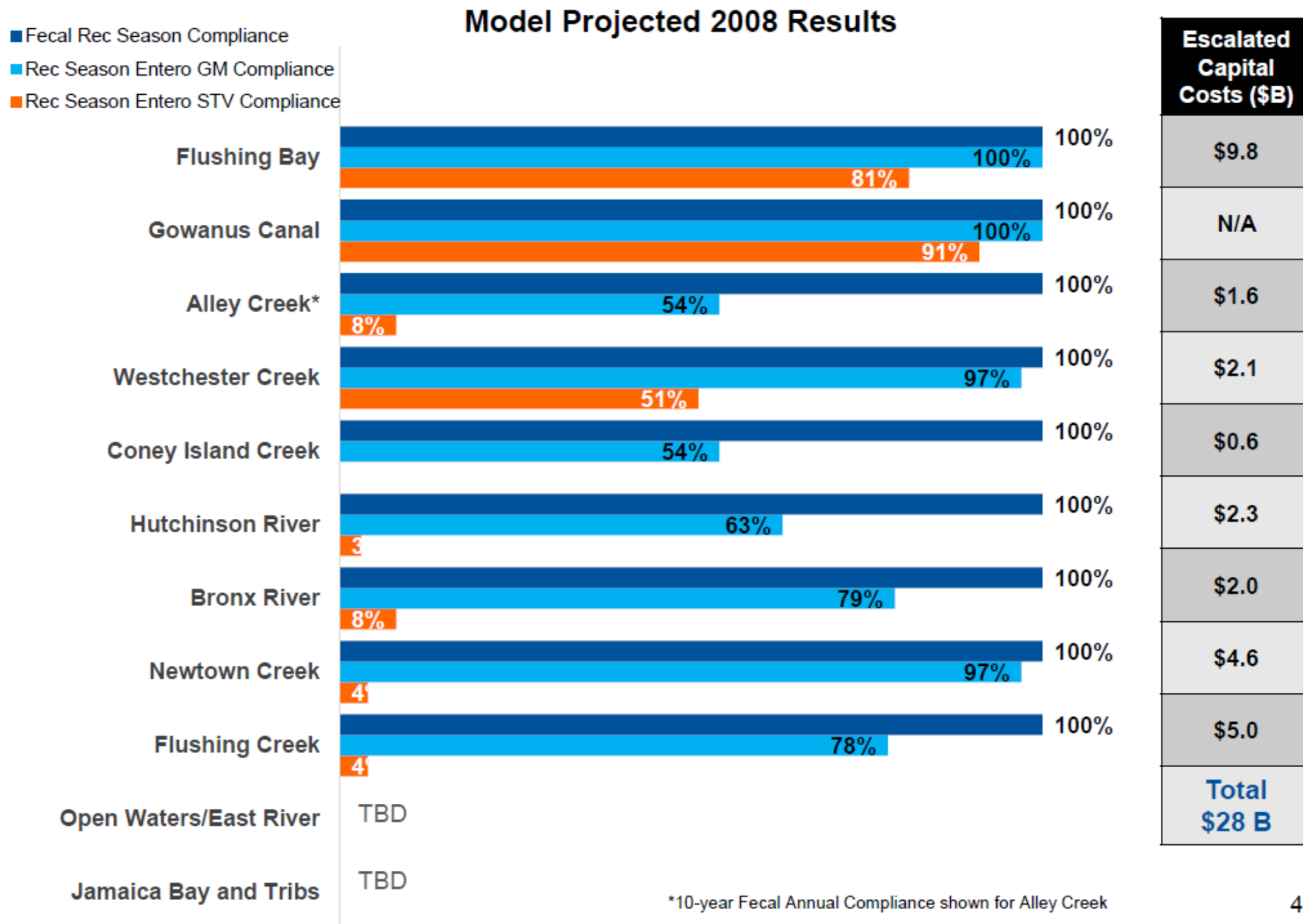
Initial Screening:	1 per 100 years
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"ATTAINMENT & COST of 100% CSO CONTROL"

at
Annual Citywide
Public Meeting

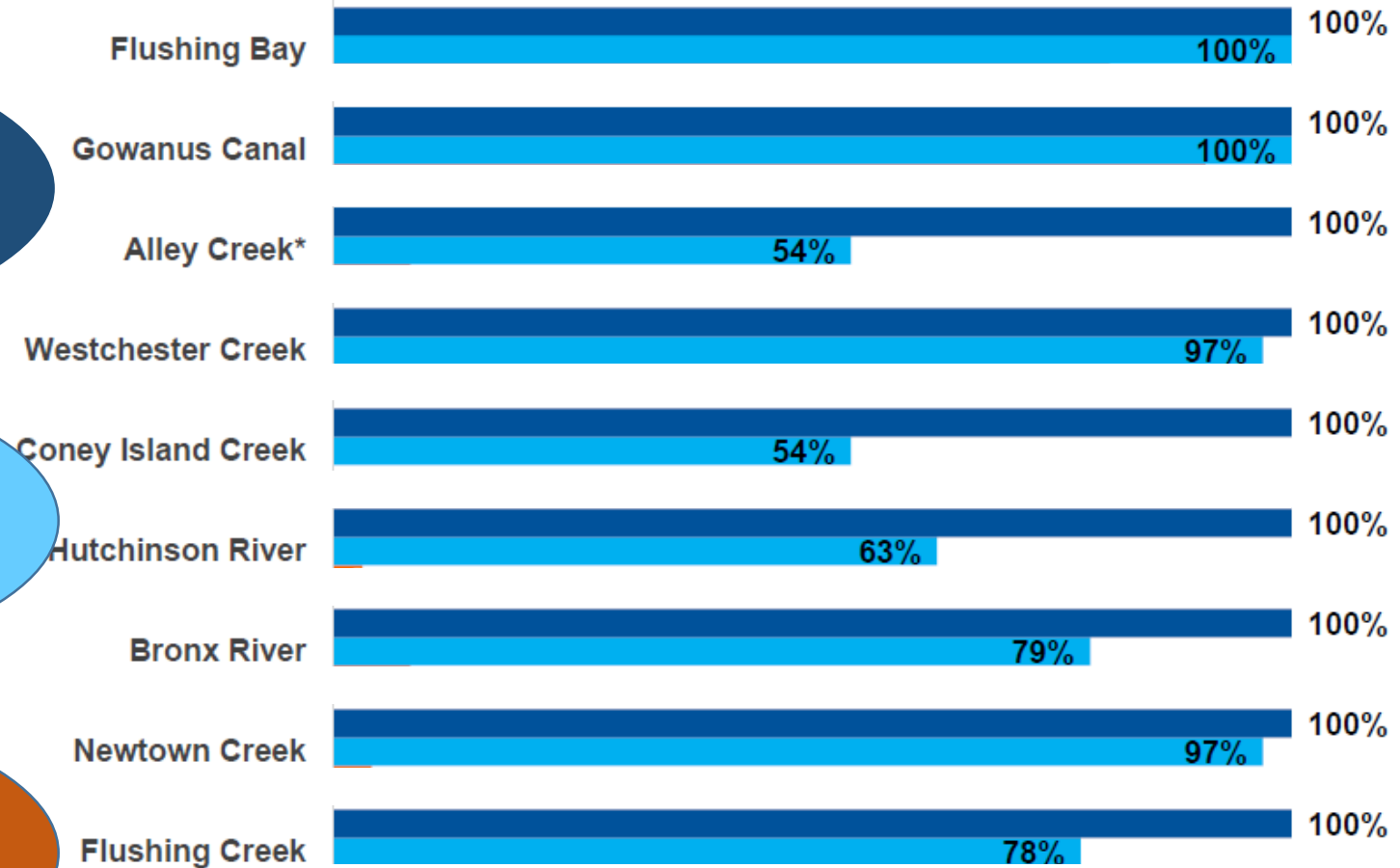
CSO LTCP

NYCDEP @
CUNY School of Law
Nov 15, 2017



Percent Improvement in Attainment (2008 Model Projections)

- Fecal Rec Season Compliance
- Rec Season Enteric GM Compliance
- Rec Season Enteric STV Compliance

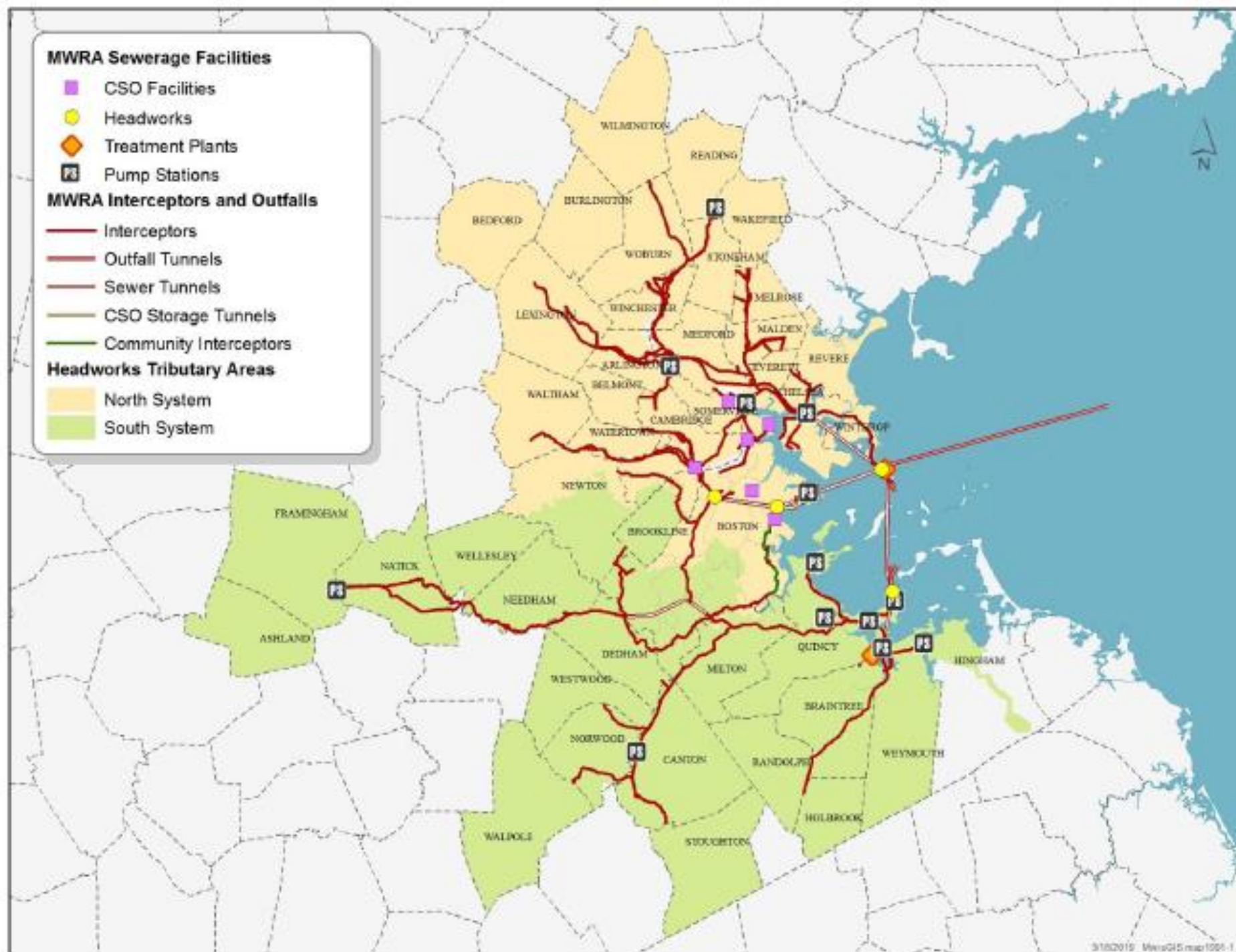


Seasonal Fecal
100%

Seasonal Enteric. GM
54 – 100%

Seasonal Enteric. STV
4 – 91%

e.g. Flushing Creek
\$5,000,000,000 a 4% Improvement in Attainment



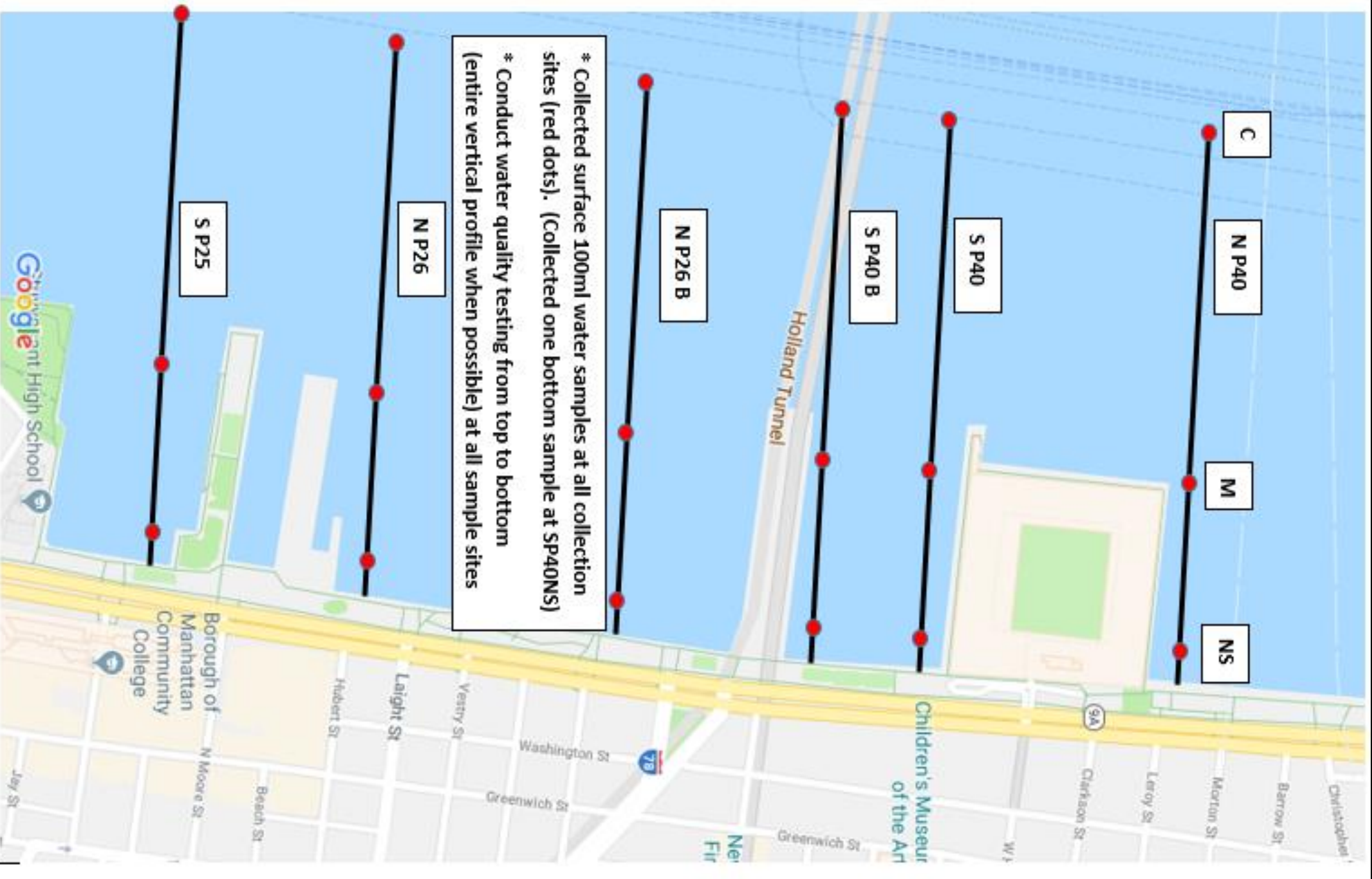
United States, NY, New York Co.,
New York



Labels



100 feet 25 m

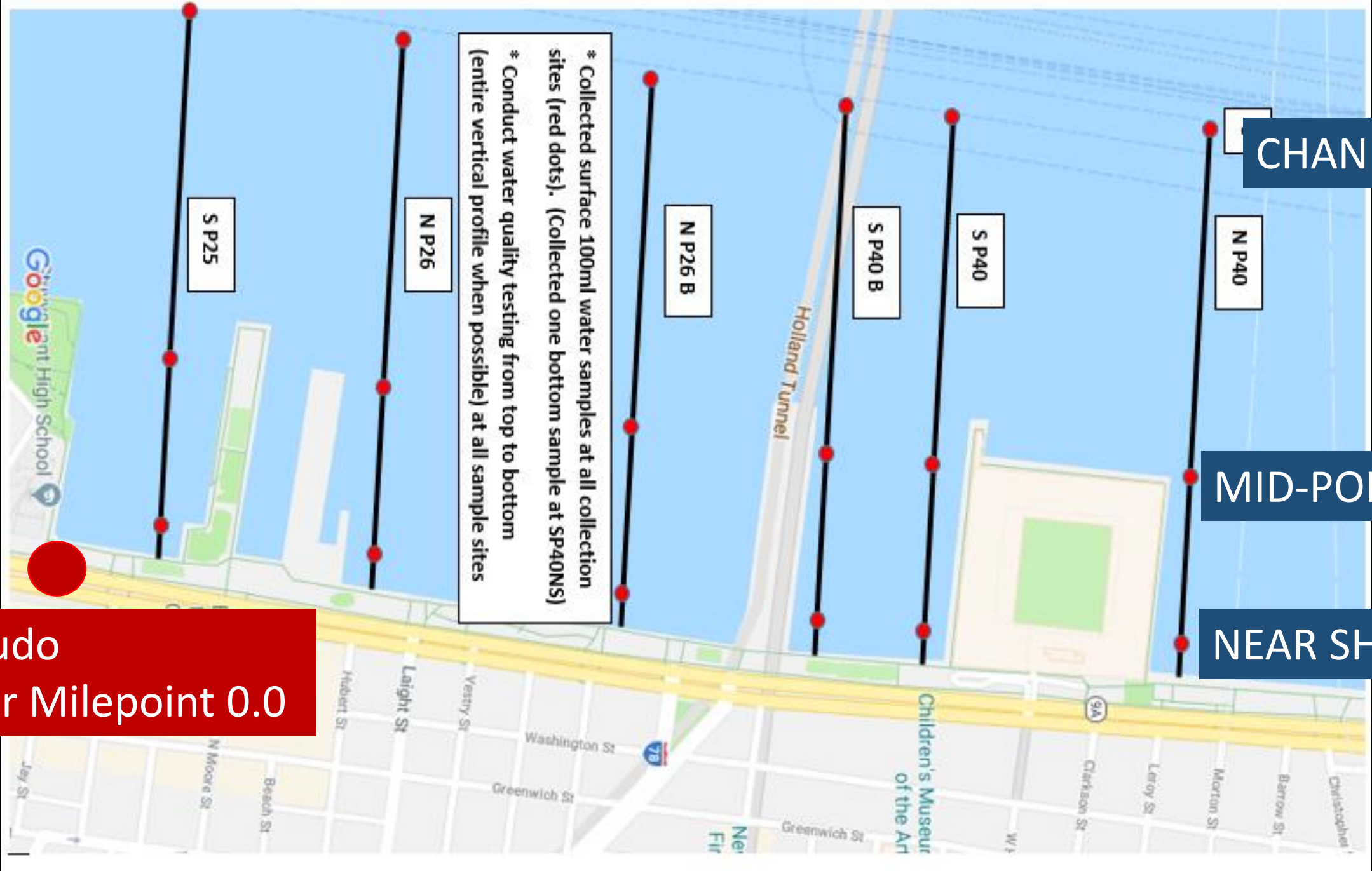


CHANNEL

MID-POINT

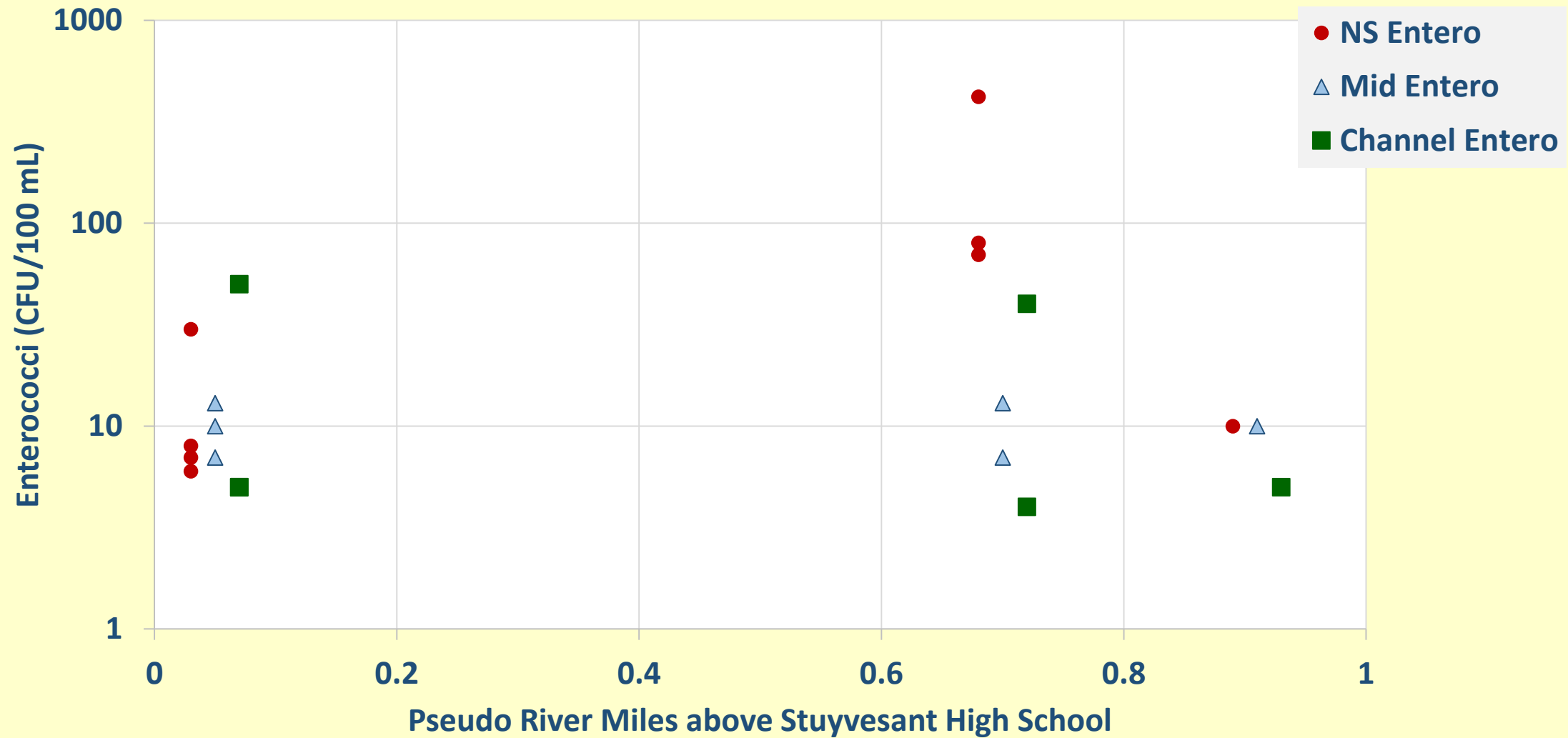
NEAR SHORE

- * Collected surface 100ml water samples at all collection sites (red dots). (Collected one bottom sample at SP40NS)
- * Conduct water quality testing from top to bottom (entire vertical profile when possible) at all sample sites

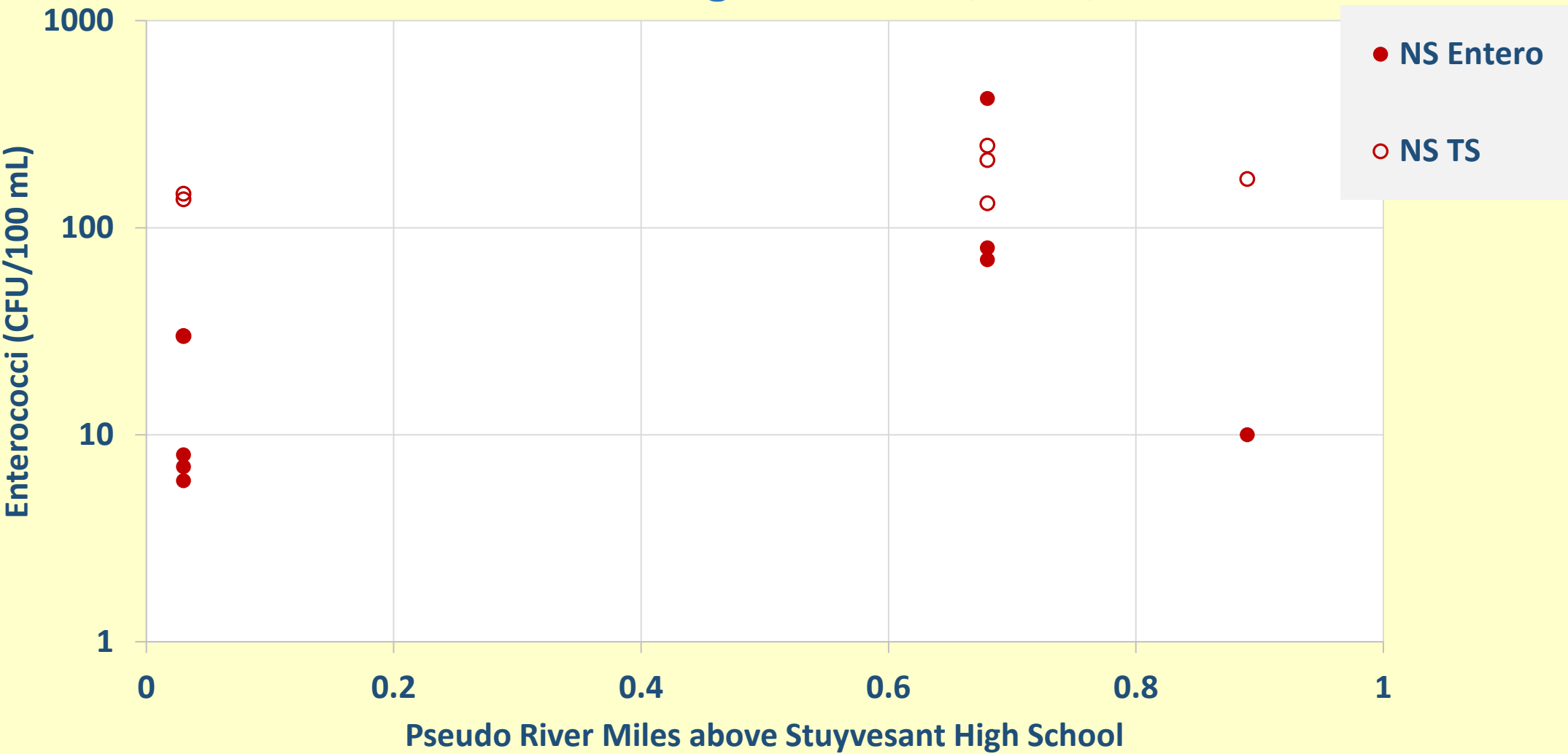


Pseudo
River Milepoint 0.0

2018-08-20 Hudson River Pathogens: HRPT / IEC



2018-08-20 Hudson River Pathogens: HRPT / IEC / COLUMBIA



B

© 2019 Microsoft

United States, NY, New York Co.,
New York



Labels



A

100 feet

25 m

Waterbody Name	No. of Additional Days when Notifications were not made in 2017 because 'old trigger'	Watershed CSO Advisory Rainfall Triggers for 12 hours		No of Days Notifications Would have been sent in 2017	
		Existing Rule (inches)	Revised Rule (inches)	Existing Rule (days)	Revised Rule (days)
Bronx River, Lower	86	0.60	0.02	22	108
Flushing Creek	57	0.40	0.05	35	92
Coney Island Creek	54	0.29	0.03	45	99
Spring Creek and tribs	31	1.40	0.35	6	37
Newtown Creek and tidal tribs	26	0.10	0.03	73	99
Hutchison River, Lower, and tribs	13	0.70	0.41	22	35
Fresh Creek	5	0.75	0.65	17	22
Flushing Bay	1	0.80	0.75	16	17